

determined with one or more positional encoders (not shown) that are coupled to subsystem 40. In other forms, one or more different position tracking devices and/or techniques can be used.

Under the control of transceiver 42, individual elements 38 can be selectively activated with switching tree 43. Each element 38 is dedicated to transmission or reception. Elements 38 are arranged in two generally vertical columns arranged in a generally back-to-back relationship with one another. Elements 38 comprising one of the columns are dedicated to transmission and elements 38 comprising the other of the columns are dedicated to reception. The number of elements 38 in each column is in a range of about 200 to about 600 elements and spans a vertical distance of about 2 to 2.5 meters along axis R; however, in other embodiments, a different vertical span and/or number of elements can be utilized. Transceiver 42 can control switching tree 43 to irradiate body B with only one element 38 of the transmitting column at a time and simultaneously receive with one or more elements 38 of the receiving column. Transceiver 42 includes logic to direct successive activation of each element 38 of the transmitting column and the corresponding one or more elements 38 of the receiving column to provide a scan of a portion of body B along a vertical direction with array 36. The corresponding "down range" or "time-of-flight" information can be used to provide positional data about a corresponding portion of body B under interrogation (such as person 22). Further information about such arrangements is provided in commonly owned U.S. Pat. No. 5,859,609, which is hereby incorporated by reference.

In a preferred embodiment, transceiver 42 and elements 38 of array 36 are of a form suitable to transmit and/or receive electromagnetic radiation selected from the range of about one Gigahertz to about one Terahertz (about 1 GHz to about 1 THz), which corresponds to a free space electromagnetic radiation wavelength range of about 0.3 meter (m) to about 300 micrometers (μm). In another preferred embodiment, an impulse transceiver arrangement is utilized that generates frequencies in a range of about 200 MHz to about 15 GHz depending on the impulse width, which corresponds to a free space electromagnetic radiation wavelength range of about 1.5 m to about 0.02 m. In a more preferred embodiment, the frequency range is about 1 GHz to about 300 GHz with a corresponding free space wavelength range of about 0.3 meter to about 1 millimeter (mm). In a most preferred embodiment, the frequency range is about 5 GHz to about 110 GHz with a corresponding free space wavelength range of about 0.06 m to about 2.7 mm.

The transmission pathway for a given element 38 of the transmitting column can be selected to be about the same length as the transmission pathway for the corresponding element(s) 38 of the receiving column to simplify calibration. Nonetheless, in other embodiments, the transmission/reception arrangement can differ. For example, in one alternative embodiment, one or more elements 38 are used for both transmission and reception. In another alternative embodiment, a mixture of both approaches is utilized. Typically, the signals received from array 36 are downshifted in frequency and converted into a processible format through the application of standard techniques. In one form, transceiver 42 is of a bi-static heterodyne Frequency Modulated Continuous Wave (FM/CW) type like that described in U.S. Pat. No. 5,859,609 (incorporated by reference herein). Commonly owned U.S. Pat. Nos. 5,557,283 and 5,455,590, each of which are incorporated by reference herein, provide several nonlimiting examples of other transceiver arrangements. In still other embodiments, a mixture of different

transceiver/sensing element configurations with overlapping or nonoverlapping frequency ranges can be utilized that may include one or more of the impulse type, monostatic homodyne type, bi-static heterodyne type, and/or such other type as would occur to those skilled in the art.

Transceiver 42 provides the data corresponding to the array signals to one or more processors 44 of subsystem 40. Processor(s) 44 can be comprised of one or more components of any type suitable to process the data received from transceiver 42, including digital circuitry, analog circuitry, or a combination of both. Processor(s) 44 can be of a programmable type; a dedicated, hardwired state machine; or a combination of these. For a multiple processor form; distributed, pipelined, and/or parallel processing can be utilized as appropriate. In one arrangement, an integrated circuit form of a programmable digital signal processor is utilized that is capable of at least 1 Gigaflap operation.

Memory 46 is included in processor(s) 44. Memory 46 can be of a solid-state variety, electromagnetic variety, optical variety, or a combination of these forms. Furthermore, memory 46 can be volatile, nonvolatile, or a mixture of these types. Memory 46 can be at least partially integrated with processor(s) 44. Removable processor-readable Memory Device (R.M.D.) 48 is also included with processor(s) 44. R.M.D. 48 can be a floppy disc, cartridge, or tape form of removable electromagnetic recording media; an optical CD or DVD disc; an electrically reprogrammable solid-state type of nonvolatile memory, and/or such different variety as would occur to those skilled in the art. In still other embodiments, R.M.D. 48 is absent.

Subsystem 40 is coupled to motor 34 to selectively control the rotation of platform 32 with processor(s) 44 and/or transceiver 42. Subsystem 40 includes one or more operator input devices 50 and one or more display devices 52. Operator input device(s) 50 can include a keyboard, mouse or other pointing device, a voice recognition input subsystem, and/or a different system as would occur to those skilled in the art. Operator display device(s) 52 can be of a Cathode Ray Tube (CRT) type, Liquid Crystal Display (LCD) type, plasma type, Organic Light Emitting Diode (OLED) type, or such different type as would occur to those skilled in the art. In one form, at least a standard keyboard and mouse are included in input devices(s) 50, and at least one high-resolution color graphic display is included in display devices 52.

System 20 further includes communication subsystem 60 coupled to subsystem 40 by communication link 62. Subsystem 60 includes network server 63 coupled to computer network 70. Computer network 70 includes the internet. Communication link 62 can be provided in the form of one or more dedicated communication channels for subsystem 40, a Local Area Network (LAN), and/or a Wide Area Network (WAN), such as the internet. In other words, server 63 can be remotely located relative to subsystem 40 with computer network 70 providing link 62. Indeed, in one embodiment, server 63 is coupled to a number of remotely located subsystems 40 with corresponding booths 30. In still other embodiments, more than one server 63 can be coupled to a common booth 30 and subsystem 40 arrangement.

Server 63 is operable to communicate via the world wide web over network 70. Server 63 includes a data store 64 to collect data provided from subsystem 40 and is arranged to provide a web site 66 comprising one or more web pages of information. Computer network 70 communicatively couples a number of sites 80 together. Each site 80 includes a computer 82 arranged to communicatively interface with